

WHAT IS CLAIMED IS:

1. A magnetic detecting element comprising:
a multilayer laminate including a first
5 antiferromagnetic layer, a pinned magnetic layer, a
nonmagnetic material layer, and a free magnetic layer
deposited in that order from below;
a nonmagnetic interlayer deposited on the free magnetic
layer;
10 a pair of first ferromagnetic layers on the nonmagnetic
interlayer in end portions in the track width direction of
the magnetic detecting element, the first ferromagnetic
layers being separated in a track width direction by a space
therebetween;
15 a pair of second antiferromagnetic layers separately
deposited on the respective first ferromagnetic layers;
a pair of second ferromagnetic layers separately
deposited on the respective second antiferromagnetic layers;
and
20 electrode layers,
wherein the magnetization direction of the second
ferromagnetic layers is antiparallel to that of the first
ferromagnetic layer.
25 2. A magnetic detecting element according to Claim 1,
wherein the distance in the track width direction between the
second antiferromagnetic layers is larger than the distance
in the track width direction between the first ferromagnetic

layers so that the first ferromagnetic layers jut out under the respective internal side surfaces in the track width direction of the second antiferromagnetic layers, toward the center in the track width direction of the magnetic detecting
5 element, and the electrode layers lie over the second antiferromagnetic layers and the jutting portions of the first ferromagnetic layers.

3. A magnetic detecting element according to Claim 2,
10 wherein the second ferromagnetic layers lie over the second antiferromagnetic layers and the jutting portions of the first antiferromagnetic layers.

4. A magnetic detecting element according to Claim 2,
15 wherein the second ferromagnetic layers overlie only the second antiferromagnetic layers.

5. A magnetic detecting element according to Claim 1,
the second ferromagnetic layers comprise a soft magnetic
20 material and are deposited directly on the upper surfaces of the second antiferromagnetic layers.

6. A magnetic detecting element according to Claim 5,
wherein the magnetic moment per area of the free magnetic
25 layer is larger than that of the first ferromagnetic layers.

7. A magnetic detecting element according to Claim 1,
further comprising nonmagnetic layers between the respective

second antiferromagnetic layers and the second ferromagnetic layers, wherein the second ferromagnetic layers comprise a hard magnetic material.

5 8. A magnetic detecting element according to Claim 1, further comprising nonmagnetic layers between the respective second antiferromagnetic layers and the second ferromagnetic layers, and third antiferromagnetic layers on the respective upper surfaces of the second ferromagnetic layers, wherein
10 the second ferromagnetic layers comprise a soft magnetic material.

9. A magnetic detecting element according to Claim 8, wherein the first antiferromagnetic layers, the second
15 antiferromagnetic layers, and the third antiferromagnetic layers comprise the same material.

10. A magnetic detecting element according to Claim 8, wherein the third antiferromagnetic layer comprises a
20 material having a blocking temperature lower than that of the materials of the first antiferromagnetic layers and the second antiferromagnetic layers.

11. A magnetic detecting element according to Claim 7,
25 wherein the magnetic moment per area of the free magnetic layer is larger than that of the first ferromagnetic layers.

12. A magnetic detecting element according to Claim 7,

wherein the magnetic moment per area of the free magnetic layer is smaller than that of the first ferromagnetic layers.

13. A magnetic detecting element according to Claim 1,
5 wherein the second antiferromagnetic layers jut out from the lower edges of the internal side surfaces thereof onto the respective jutting portions of the first ferromagnetic layers with the thickness thereof reduced.

10 14. A magnetic detecting element according to Claim 1, wherein the electrode layers lie above and under the multilayer laminate.